REMARKS

By this amendment, claims 9 and 10 have been amended, and claims 11-13 have been added. Thus, claims 9-13 are now active in the application. Reexamination and reconsideration of the application are respectfully requested.

The substitute specification and abstract filed January 30, 2006 have been revised to make a few additional corrections. The revisions are incorporated in the attached substitute specification and abstract. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the specification and Abstract by the current amendment. The attachment is captioned "**Version with markings to show changes made**."

Initially, applicants wish to thank the Examiner for acknowledging, at the top of page 2 of the Office Action, the election of the invention of Group II, including claims 9 and 10. By the current amendment, claims 11-13 have been added, and these claims are also part of the invention of Group II.

Next, in items 6 and 7 on pages 4 and 5 of the Office Action, claims 9 and 10 were rejected under 35 U.S.C. 102(e) as being anticipated by Tokunaga et al. (U.S. 6,630,796). This rejection is respectfully traversed in part and is believed clearly inapplicable to the claims as now amended, for the following reasons.

With exemplary reference to the drawing figures, independent claim 9 now sets forth a method of aging a plasma display panel 1 having a scan electrode 5 covered with a dielectric layer 7, a sustain electrode 6 covered with the dielectric layer 7 and a data electrode 10, the method comprising: during manufacture of the plasma display panel 1, performing an aging discharge by applying a voltage having an alternating voltage component at least between the scan electrode 5 and the sustain electrode 6 such that the voltage is applied in an alternating manner between one condition (see Fig. 4B) in which the scan electrode 5 acts as an anode and the sustain electrode 6 acts as a cathode, and another condition (see Fig. 4A) in which the scan electrode 5 acts as a cathode and the sustain electrode 6 acts as an anode; wherein a waveform of voltage applied between the scan electrode 5 and the sustain electrode 6, in the condition (see Fig. 4A) in which the scan electrode 5 acts as the cathode and the sustain electrode 6 acts as the anode, has a gradually ascending leading edge; and wherein a waveform of voltage applied

between the scan electrode 5 and the sustain electrode 6, in the condition (see Fig. 4B) in which the scan electrode 5 acts as the anode and the sustain electrode 6 acts as the cathode, has a sharply ascending leading edge and a gradually descending trailing edge.

Also with exemplary reference to the drawing figures, independent claim 10 sets forth a method of aging a plasma display panel 1 having a scan electrode 5 covered with a dielectric layer 7, a sustain electrode 6 covered with the dielectric layer 7 and a data electrode, the method comprising: during manufacture of the plasma display panel 1, performing an aging discharge by applying a voltage having an alternating voltage component at least between the scan electrode 5 and the sustain electrode 6 such that the voltage is applied in an alternating manner between one condition (see Fig. 4B) in which the scan electrode 5 acts as an anode and the sustain electrode 6 acts as a cathode, and another condition (see Fig. 4A) in which the scan electrode acts 5 as a cathode and the sustain electrode 6 acts as an anode; wherein the aging discharge in the condition (see Fig. 4B) in which the scan electrode 5 acts as the anode and the sustain electrode 6 acts as the cathode is weaker than the aging discharge in the condition (see Fig. 4A) in which the scan electrode 5 acts as the cathode and the sustain electrode 6 acts as the anode.

Thus, according to the present invention as set forth in each of claims 9 and 10, the plasma display panel is put through an aging discharge process during manufacture. As described in the "Background Art" section of the present specification, plasma display panels have, in the past, exhibited high voltage at the start of discharging during use, and the discharge itself was unstable. Accordingly, as also described in the "Background Art" section, there have been various attempts to carry out aging of the plasma display panels in the manufacturing process in order to obtain consistent and stable discharge characteristics of the plasma display panel in use (see, for example, lines 7-10 on page 2 of the original specification). Since this aging process occurs during manufacture of the plasma display panel, the panel receives no image signal or other signals relating to the image signal and, accordingly, the panel displays no image. Rather, the display panel merely undergoes an aging process in which the discharge cells are repeatedly discharged. Thus, claims 9 and 10 now specifically state that the "performing an aging discharge ..." occurs "during manufacture of the plasma display panel."

In contrast to the present invention of each of claims 9 and 10, the Tokunaga et al. reference discloses a method for driving a plasma display panel to show images. The method

disclosed in Tokunaga et al. does not relate to the performance of aging discharge that, as required by claims 9 and 10, occurs "during manufacture of the plasma display panel." In the Tokunaga et al. reference, the driving device causes on/off control of discharge cells according to image signals, in order to display images on the panel. According to Tokunaga et al., a leading edge of the last sustain pulse in each sub-field can be provided with a mild ascent so as to contribute to a preferable image display. However, the waveforms described in Tokunaga et al., as discussed above, relate to the driving of the plasma display panel to display images in use, and do not relate to an aging process of the plasma display panel occurring during manufacture thereof.

Furthermore, claim 10 is directed to the feature of the present invention that the aging discharge generated when the scan electrode 5 acts as the anode and the sustain electrode 6 acts as the cathode is weaker than the aging discharge generated when the scan electrode 5 acts as the cathode and the sustain electrode 6 acts as the anode.

In contrast, in the Tokunaga et al. reference, there is no difference in intensity of the discharge during repeated application of sustain pulses regardless of the polarity of the scan electrode (i.e., the row electrode Y in Tokunaga et al.) and the sustain electrode (i.e., the row electrode X in Tokunaga et al.).

This will now be described in greater detail.

In the structure of an AC type discharge panel, each electrode is covered with a dielectric layer, and thus, the electrodes are not exposed to the discharge space. Due to this structure, unlike the DC type discharge, the AC type discharge is not influenced by the direct component itself of voltage applied to the electrode but is rather influenced by change in the direct component.

This fact will be further described below. The discharge in AC type discharge cells is generated by voltage applied to the discharge space. Voltage Vcell, which is applied to the discharge space, is calculated as the sum of voltage Vsupply fed to the electrodes from outside and voltage Vwall generated by wall charge: i.e., Vcell = Vsupply + Vwall.

Besides, the discharge in the AC type discharge cells is not dependent on voltage Vsupply supplied from outside but rather depends on changes in voltage Vcell applied to the discharge space.

When a charged particle is generated by discharging, the charged particle is attracted to the electric field in the discharge cell, whereby the electric field inside the discharge cell is eased and the easing phenomenon is continued as long as a charged particle is in existence. That is, when the discharge produces a sufficient amount of charged particles, the electric field in the discharge cell after discharge is eased down to almost zero. This means that voltage Vcell applied to the discharge cell after discharge measures almost OV. On the other hand, when the discharge produces only a small amount of charged particles, the electric field in the discharge cell is not sufficiently eased, and therefore, the electric field in the discharge cell does not become zero.

The description above will be clarified with the use of The Voltage Transfer Curve, for example, see the attached copies of *L. F. Weber : Measurement of Wall Charge and Capacitance Variation for a Single Cell in AC Plasma Display Panel IEEE Transactions on Electron Devices, ED-24, 7 pp.864-869 (1977) or H G. Slottow : The Voltage Transfer Curve and Stability Criteria in the Theory of the AC Plasma Display IEEE Transactions on Electron Devices, ED-24, 7. pp. 848-852 (1977).*

From the point of view discussed above, the discharge and polarity of electrodes shown in Fig. 7 of the Tokunaga et al. patent will be analyzed below. Fig. 7 of the Tokunaga et al. patent is reproduced below with reference characters (1) - (4) added for the following discussion:

(i) the discharge indicated by (1) in the below Fig. 7 is the discharge as a result of increase in voltage of ROW ELECTRODE X. At this time, ROW ELECTRODE Y (the scan electrode) acts as the cathode and ROW ELECTRODE X (the sustain electrode) acts as the anode. Fig. 7 shows the discharge as a strong discharge;

(ii) the discharge indicated by (2) in the below Fig. 7 is the discharge as a result of decrease in voltage of ROW ELECTRODE X. At this time, ROW ELECTRODE Y (the scan electrode) acts as the anode and ROW ELECTRODE X (the sustain electrode) acts as the cathode. Fig. 7 shows the discharge as a weak discharge;

(iii) the discharge indicated by (3) in the below Fig. 7 is the discharge as a result of increase in voltage of ROW ELECTRODE Y. At this time, ROW ELECTRODE Y (the scan electrode) acts as the anode and ROW ELECTRODE X (the sustain

electrode) acts as the cathode. Fig. 7 shows the discharge as a strong discharge; and

(iv) the discharge indicated by (4) in the below Fig. 7 is the discharge as a result of decrease in voltage of ROW ELECTRODE Y. At this time, ROW ELECTRODE Y (the scan electrode) acts as the cathode and ROW ELECTRODE X (the sustain electrode) acts as the anode. Fig. 7 shows the discharge as a weak discharge.

Thus, as is shown in Fig. 7 of the Tokunaga et al. patent, the discharge generated by the repeatedly applied sustain pulse has the order of (1) – (2) – (3) – (4). That is, the discharge, which is generated when ROW ELECTRODE Y (the scan electrode) acts as the cathode and ROW ELECTRODE X (the sustain electrode) acts as the anode, takes a pattern where strong discharge (1) and weak discharge (4) are alternately repeated. Similarly, the discharge, which is generated when ROW ELECTRODE Y (the scan electrode) acts as the anode and ROW ELECTRODE X (the sustain electrode) acts as the cathode, takes a pattern where strong discharge (3) and weak discharge (2) are alternately repeated.

The conclusion obtained from Fig. 7 of Tokunaga et al. is that discharge generated by the repeatedly applied sustain pulse in the reference is maintained at the same intensity regardless of the polarity of ROW ELECTRODE Y (the scan electrode) and ROW ELECTRODE X (the sustain electrode).

Fig. 7 of Tokunaga et al. shows that discharge DS2 observed at a trailing edge of the last sustain pulse is weaker than discharge DS1, as is pointed out by Examiner. However, discharge DS2 is generated as a result of decrease in voltage of ROW ELECTRODE Y; the discharge is generated when ROW ELECTRODE Y (the scan electrode) acts as the cathode and ROW ELECTRODE X (the sustain electrode) acts as the anode. Discharge DS1 is the same as the discharge indicated by (3) in the below Fig. 7, which is generated when ROW ELECTRODE Y (the scan electrode) acts as the cathode and ROW ELECTRODE X (the sustain electrode) acts as the anode.

Thus, for the above reasons, it is believed apparent that the inventive method as defined in claims 9 and 10 is not anticipated by the Tokunaga et al. patent. Furthermore, the above-described differences are clearly such that a person of ordinary skill in the art would not have been motivated to modify the Tokunaga et al. patent or to make any combination of the references of record in such a manner as to result in or otherwise render obvious the present invention of claims 9 and 10. Therefore, it is respectfully submitted that claims 9 and 10, as well as dependent claims 11-13, are clearly allowable over the prior art of record.

The Examiner's attention is also directed to the dependent claims 11-13 which set forth additional features of the invention and further define the invention over the prior art. For example, claim 11 clarifies that, as clearly shown in Figs. 4A and 4B, in the condition in which the scan electrode acts as the cathode and the sustain electrode acts as the anode (Fig. 4A), the gradually ascending leading edge of the waveform has an ascending slope smaller than a descending slope of the sharply descending trailing edge, and also, in the condition in which the scan electrode acts as the anode and the sustain electrode acts as the cathode (see Fig. 4), the sharply ascending leading edge of the waveform has an ascending slope greater than a descending slope of the gradually descending trailing edge. In claims 12 and 13, it is specified further that, in the performing of the aging discharge, the aging discharge is carried out in such a manner as to form an asymmetric dent (see Figs. 3A-3D) in a protecting layer 8 covering the dielectric layer 7, as described in the original specification at, for example, lines 1 and 2 of page 9.

Also, for the Examiner's reference, it is noted that the description of "voltage applied to the scan electrode" (see Fig. 4A) refers to the condition in which the scan electrode acts as the cathode and the sustain electrode acts as the anode, and the description of "voltage applied to the sustain electrode" (see Fig. 4B) refers to the condition in which the scan electrode acts as the anode and the sustain electrode acts as the cathode, as described in the original specification at, for example, lines 1-6 of page 10.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is earnestly solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, it is respectfully requested that the Examiner contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

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